

**IN THE CLAIMS:**

Please amend the claims as follows:

1. (Currently Amended) A method of decomposing a seismic wavefield, comprising:  
~~wherein a~~ obtaining a 3D wavefield ~~is obtained~~ by a cross-line acquisition; ~~and~~  
filtering[ed] the 3D wavefield by applying a decomposition filter having two physical spatial directions to obtain a decomposed wavefield.
2. (Currently Amended) The method of claim 1, wherein the decomposition is ~~for at least one of a group consisting of~~ comprises up-~~/~~ or down going decomposition, P/S decomposition, elastic decomposition and acoustic decomposition.
3. (Currently Amended) The method of claim 1, wherein the decomposition filter comprises (i) an in-line component ( $k_x$ ) and a cross-line component[s] ( $k_y$ ) or (ii) a spatial representation of the in-line component ( $k_x$ ) and the cross-line component[s] ( $k_y$ ).
4. (Currently Amended) The method of claim 1 wherein the decomposition filter is ~~applied as~~ a cascaded filter.
5. (Currently Amended) The method of claim 1, wherein the decomposition filter is a compact filter.
6. (Currently Amended) The method of claim 1, wherein the decomposition filter filters an obtained pressure wavefield.
7. (Currently Amended) The method of claim 1, wherein the decomposition filter exclusively filters an obtained pressure wavefield.

8. (Currently Amended) The method of claim 1, ~~further comprising wherein the step of applying the filter is preceded by a calibrati[o]ng step to match geophone recordings to match~~ with hydrophone recordings.
9. (Currently Amended) The method of claim 1, ~~wherein the step of applying the filter is followed by a step of~~ further comprising removing multiples from a component of the decomposed wavefield.
10. (Currently Amended) The method of claim 1, ~~wherein the step of applying the filter is followed by a step of~~ further comprising imaging or migrating the filtered wavefield to generate[d] an image of subterranean formations.
11. (Original) The method of claim 1, wherein the wavefield is obtained through receivers located on the sea floor.
12. (Original) The method of claim 1, wherein the wavefield is obtained through receivers towed by a vessel.
13. (New) The method of claim 1, wherein the decomposition comprises P/S decomposition.
14. (New) The method of claim 1, wherein the decomposition comprises elastic decomposition.
15. (New) The method of claim 1, wherein the decomposition comprises acoustic decomposition.